Changing Factor Incomes in Industries and Occupations: Review of Long Term Trends

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Institute for Studies in Industrial Development

July 2012

Working Paper
No: 2012/03

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Review of Long Term Trends

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WORKING PAPER
2012/03

REGIONAL DISPARITIES IN GROWTH AND HUMAN DEVELOPMENT IN INDIA

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July 2012

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CHANGING FACTOR INCOMES IN INDUSTRIES AND OCCUPATIONS
Review of Long Term Trends

Satyaki Roy[*]

[***Abstract**: Impressive growth in India in the recent past had been accompanied by rising inequality that can largely be attributed to changing factor shares in favour of profits. This paper apart from looking into factor shares such as wages, profits, rents and interests also focuses on the changing share of inputs in value of output. The changes are identified at the macro level and also at more disaggregated levels of corporate sector, manufacturing segment and industries at two digit levels. The paper argues that rising capital intensity in industries can largely be explained by the peculiar trajectory of growth that increasingly depends on profit income but also indicates that investments in the manufacturing sector were not always directed towards productivity raising machinery but also toward creating capacities that did not result in higher productivity. The paper highlights that average wage of workers falls far short from their productivity and in fact the labour lost more than half they could get for producing the same output in the past two decades. In the final section the paper argues that skill premium for workers in an excess labour supply situation is largely determined by the relative absorption capacity of various sectors and not really linked to skill requirements of specific sectors.]*

The high growth in per capita income in India in the recent past somehow glosses over the flip side of the story that the impressive performance in terms of growth has been accompanied by rising inequality. The issues related to distribution are often viewed by policymakers in the context of welfare judgments and less in terms of its implication on the growth trajectory itself. However sustainability of the growth largely depends upon the income distribution as it influences both consumption and investment demand. The nature of distribution of the aggregate pie largely defines the growth and composition of output in subsequent periods. The fact of high growth together with rising inequality

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Acknowledgements: I express my special thanks to T.S. Papola for his comments and suggestions on the earlier draft of the paper and also for the inputs he shared in repeated discussions. I would also like to thank Biswajit Chatterjee, R. Nagraj, N.S. Siddharthan, Biswanath Goldar and Praveen Jha for their valuable comments and suggestions on the paper presented at the National Seminar on Structural Changes, Industry and Employment in the Indian Economy held at ISID, 20-21 April, 2012. The usual disclaimer applies.

entails a growth trajectory that has to be less inclusive precisely because it would depend on rising profit incomes and declining wage share. However, since higher profits imply dampening consumption demand and because of the deficient demand there could be depressing effects on expected profits and hence on investment decisions, it seems obvious that the growth becomes unsustainable. More the growth becomes dependent on profit income the demand for goods would be more dependent on imports or on technologies of labour displacing in nature and that would eventually reduce the wage share further.[1] This is precisely the pretext that creates concern about rising inequality despite impressive growth in the recent past. And this perhaps draws our interest to see how factor shares behaved during the period of high growth.

This paper in this context aims to look into the changes in factor incomes in terms of profits, wages, rent and interest during the pre and post liberalization period. Although the paper takes note of the changes in factor shares in the conventional sense, it also looks into the changing share of inputs in the value of output over the years. In other words apart from seeing how wages and profits add up to value added, we also see how the share of various inputs changes in the gross value of output. The issue of factor incomes is also a contesting terrain in the context of policies related to labour market flexibility. 'Competitiveness' in whatsoever way is defined finally boils down to the issue reducing labour's claim in the value-added assuming all other costs to be exogenously given. As a result the relative movement of factor incomes defines a class process where contesting claims represent various groups of people playing specific roles in the production and distribution of surplus. However the broad picture of the dynamics of factor incomes need not always match with that of specific sectors and therefore the movements in sectors seem to be probed into. The specifics often render greater insights on the composition of factor incomes and how this is linked to issues involving technology and use of respective inputs.

Furthermore, it is generally held that globalisation entails greater mobility of skilled labour force and facilitates rise in the skill premium precisely because of the rise in relative demand for skills driven by increased trade or use of technology. Some argue that this is an obvious result of the advance of science an exogenous process independent of the profit motive, bringing in new technology and skill requirements follow the technology path. The other view of course conceives the growth of technologies as endogenous arguing new technologies are outcomes of changing incentives. And firms use skill complementary machines to use the available skills; this creates an upward sloping demand curve of skills where both demand for skills and skill premium increases

[1] For further discussion see Kalecki (1971, 1976).

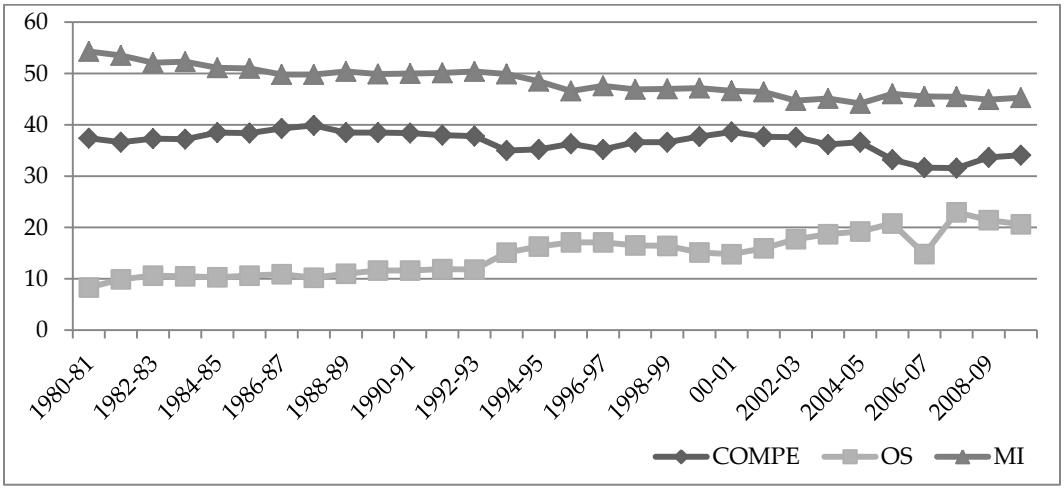
giving rise to a virtuous circle. This paper aims to throw light on the nature of changes that have taken place in the skill premium for skilled workers by industries and occupations. In this context it also exposes the divergence in returns by gender across the workforce from various educational backgrounds.

The paper uses four data bases namely, National Accounts Statistics (NAS), Prowess database, Annual Survey of Industries (EPWRF) and National Sample Survey (NSS). In the following section we present the broad overview of the factor incomes across the economy derived from NAS; Section 3 talks about the changes in factor shares in various industries using the prowess database. Hence this section reveals the trends in the corporate sector by broad categories of industries. Section 4 shows the broad trends in the manufacturing sector derived from ASI data; Section 5 brings into the fore the movement of factor incomes in various industry groups within the manufacturing sector and finally Section 6 using NSS data captures the changes in skill premium by industry and occupation groups.

1. Trends in factor shares: An overview

In this section we primarily put forward the changing trends of factor shares across the economy using NAS data and then using the prowess database see the broad trends in the corporate sector in specific. *Chart 1* shows the share of compensation to employees, mixed income and operating surplus in GDP during the period 1980-81 to 2009-10. There has been a clear trend of decline in the share of compensation of employees and mixed income together with a sharp rise in the share of operating surplus since 1993-94. The share of operating surplus increased from 8.3 per cent in 1980-81 to 20.6 per cent in 2009-10. The rise in profits is made out of a simultaneous decline in the share of compensation to employees from 37.4 per cent to 34.1 per cent and that of mixed income that declined sharply from 54.3 per cent to 45.3 per cent during the same reference period. Comparing the averages for three successive decades we find that compensation to employees declined from 37.4 in 1980s to 34.1 in 2000s and for the same reference period mixed income declined from 51.4 to 45.4 and operating surplus increased from 10.4 to 18.7. The rise of the operating surplus had been much sharper since 1993. In countries such as India mixed income refers to the income of self-employed in the unorganized segment which assumes a pattern very similar to wage incomes. The broad picture unambiguously indicates a profit inflation at the cost of a declining share of workers and the self-employed.

Chart1
Share of compensation to employees mixed income and operating surplus in GDP (all sectors)

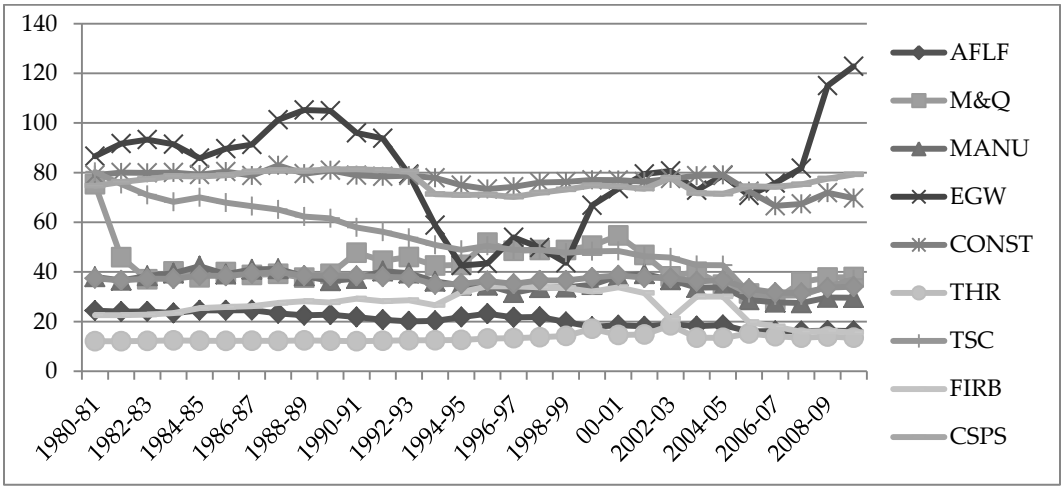


Source: National Accounts Statistics

In *Chart 2 and 3* we show the share of compensation to employees and that of operating surplus by industry categories. The trends show a sharp fall in the share of employees in the case of transport-storage and communication and mining and quarrying. In the case of the former the decline starts had been from 80.3 per cent in 1980/81 to 37.3 in 2009/10 and for the latter it declined from 75.3 per cent to 37.4 per cent during the same reference period. The share moderately declined in manufacturing, construction and in finance real estate and business services. The share of employees increased in trade hotel and restaurants and community and social services during the same reference period. In the case electricity gas water the share of employees declined sharply during the period 1990/91 to 1994/95 and then increased sharply from 1999-00 onwards.

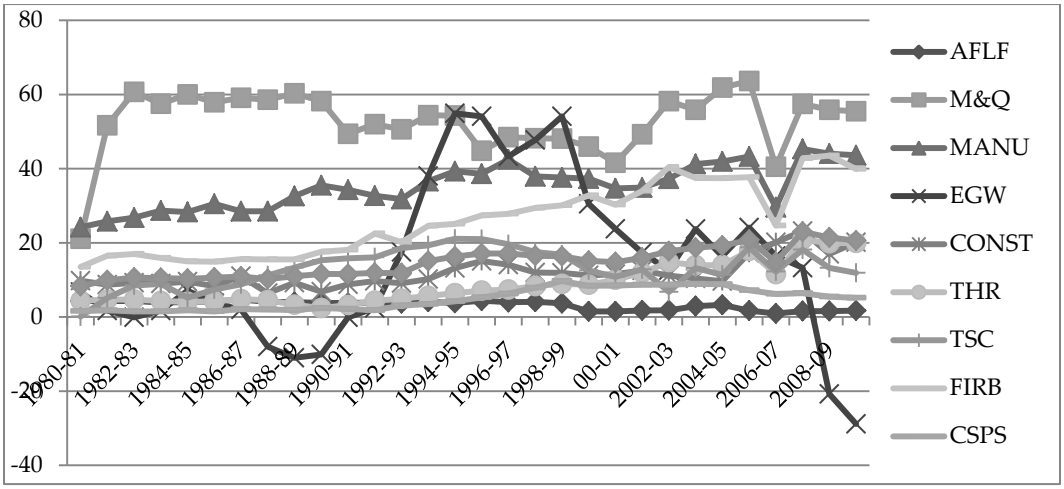
The share of operating surplus on the other hand increased sharply in the case of mining and quarrying and finance insurance and business and manufacturing. Comparing point to point figures from 1980/81 to 2009/10 in the case of mining and quarrying although the rise had been quite large, but actually it had been moderate from 1983/84 onwards. A more consistent sharper rise is visible in the cases of manufacturing and finance insurance and business service.

Chart 2
Share of compensation to employees by industry groups



Source: Same as Chart 1

Chart 3
Share of operating surplus by industry groups



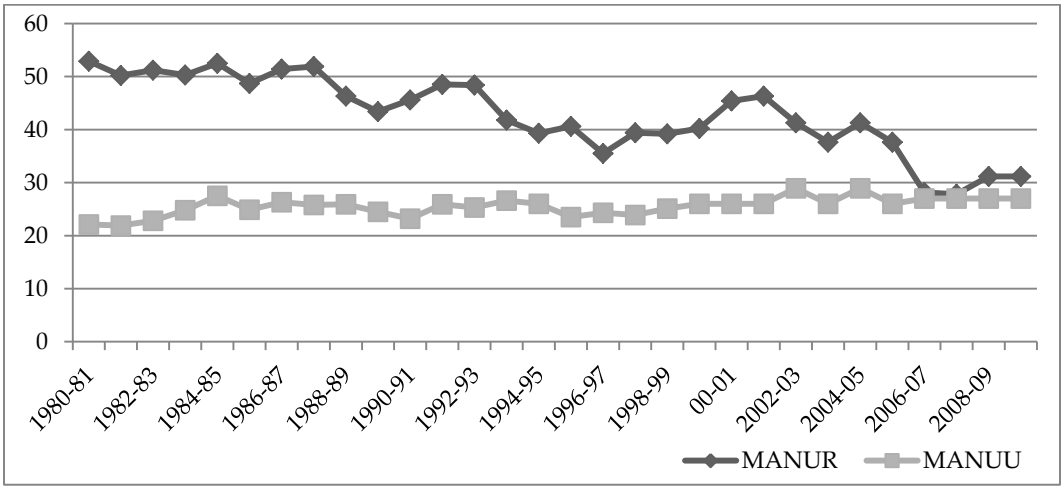
Source: Same as Chart 1

In the manufacturing sector considering two groups namely registered and unregistered we find that the share of employees declined consistently in the case of the former while for the latter it marginally increased (*Chart 4*). In the case of registered manufacturing the employees share declined from 52.9 per cent in 1980/81 to 31.2 per cent in 2009/10 while for the unregistered manufacturing it increased from 22.1 to 27 per cent during the same reference period. This might be because of the fact that in the case of registered manufacturing there had been some sort of unionization that kept the wage level higher

than the market clearing wage or the workers were paid efficiency wages. Because of declining union power in the wake of liberalisation and because of rising outsourcing the labour might have lost their share in the organized segment. In the unregistered manufacturing on the other hand there had not been any sort of institutional protection to wage claims and the marginal rise reflects the rising demand for labour in the unregistered segment of manufacturing.

Chart 4

Share of compensation to employees in registered and unregistered manufacturing



Source: Same as Chart 1

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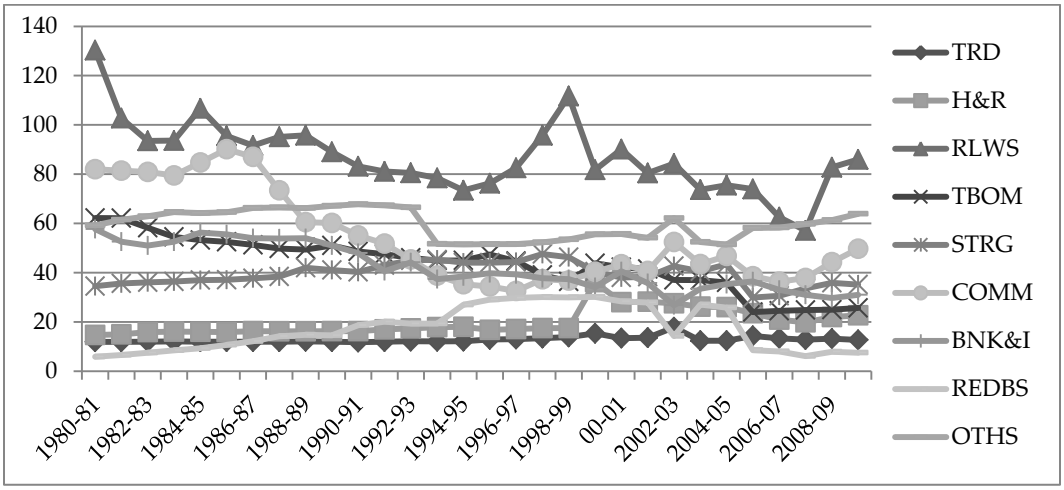
In the case of services the employees' share declined sharply in the case of railways, communication and banking and insurance (*Chart 5*). The decline had been moderate in transport by other means and other services. The employees share increased relatively high in the case of s hotel and restaurants and in other services. However in the case of services the trends have been more secular with hardly any peaks and troughs linked to policy regimes.

Chart 5
Share of compensation to employees in services



Source: Same as Chart 1

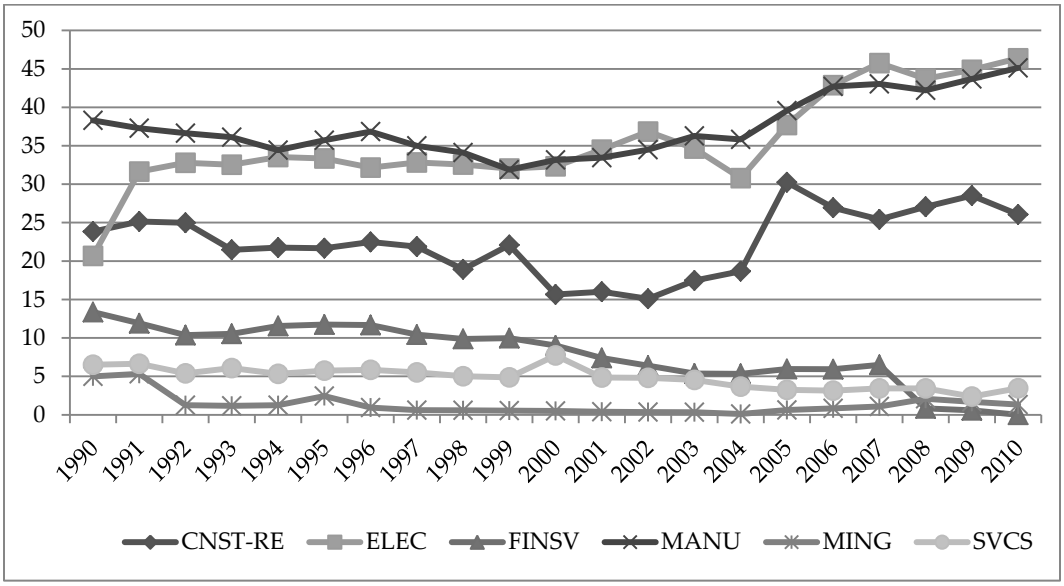
In *chart 6, 7 and 8* we show the ratio of raw material, salaries and wages and profit to income respectively using prowess database. This is primarily to see how the cost of inputs and returns varied in the case of corporate sector. The cost of raw materials with respect to income increased in the case of construction and real estate, electricity and manufacturing (*Chart 6*). However it declined in mining and services during the same period. The rise in input costs in the former group became sharper since 2003. *Chart 7* shows that the ratio of wages and salaries to income is much higher in the case of mining and financial services compared to other industry groups. Although the ratio shows a rising trend in the initial periods in most of the industries it declined since 2001.

The ratio of profit to income as shown in *chart 8* shows a rising trend in almost all industry groups but it appears to be the mirror image of *chart 7* for obvious reasons. The period of sharper rise in the ratio of profit to income coincides with that of the decline in the ratio of wages and salaries to income.

The ratio of profit to income in the corporate sector has been relatively higher in the case of services (other than finance) compared to other industries. However the ratio increased sharply in the case of financial services and mining since 2001. Comparing *chart 6, 7 and 8* one can conclude that the rise in profit to income ratio in the mining sector is primarily because of the fall in wages and salaries to income since ratio of raw materials to income remained stable during the same period. In the case of financial services the

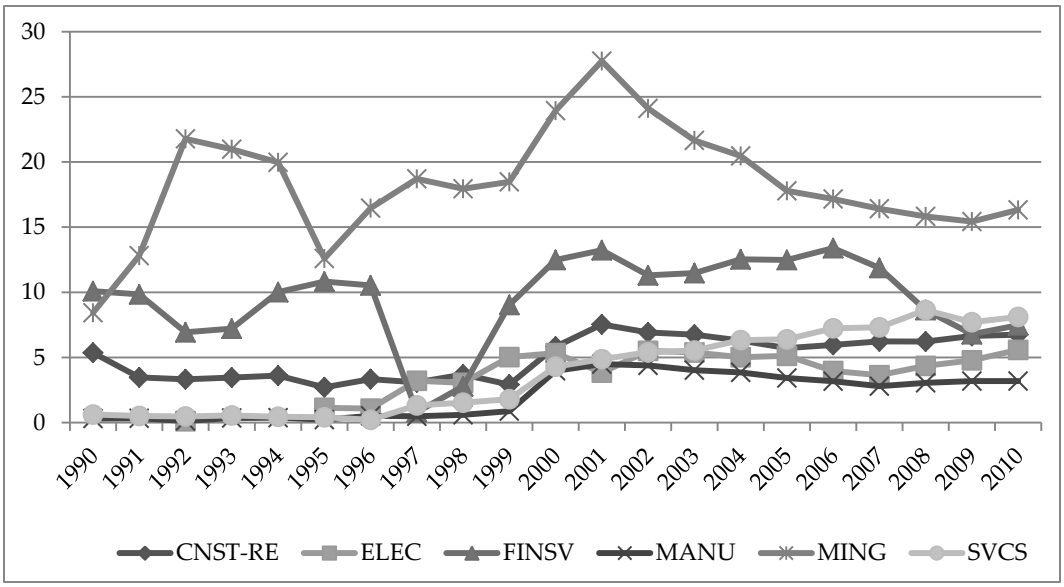
rise in profit ratio seems to be driven by the relative decline in raw material and salaries and wages.

Chart 6
Raw materials to income ratio by industry groups



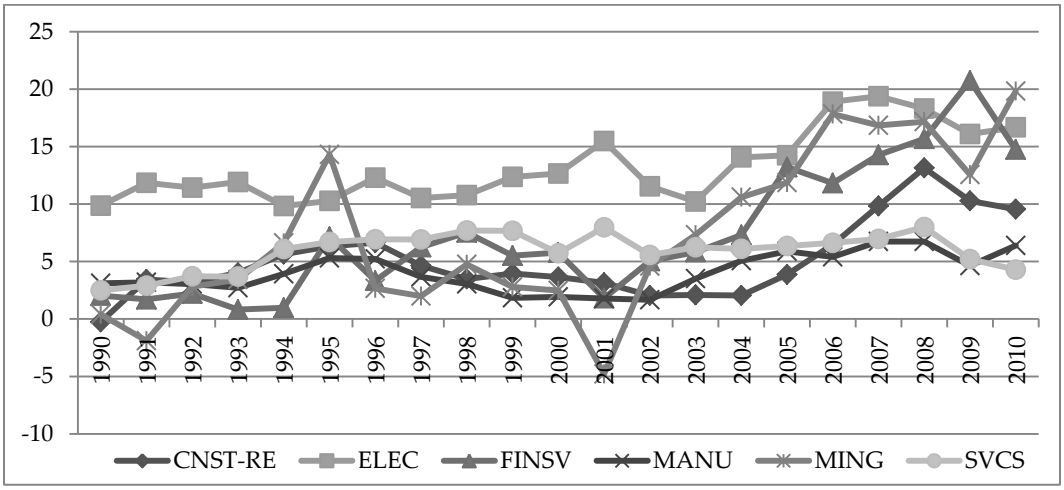
Source: Prowess database

Chart 7
Salaries and wages to income ratio by industry groups



Source: Same as Chart 6

Chart 8
Profit to income ratio by industry groups



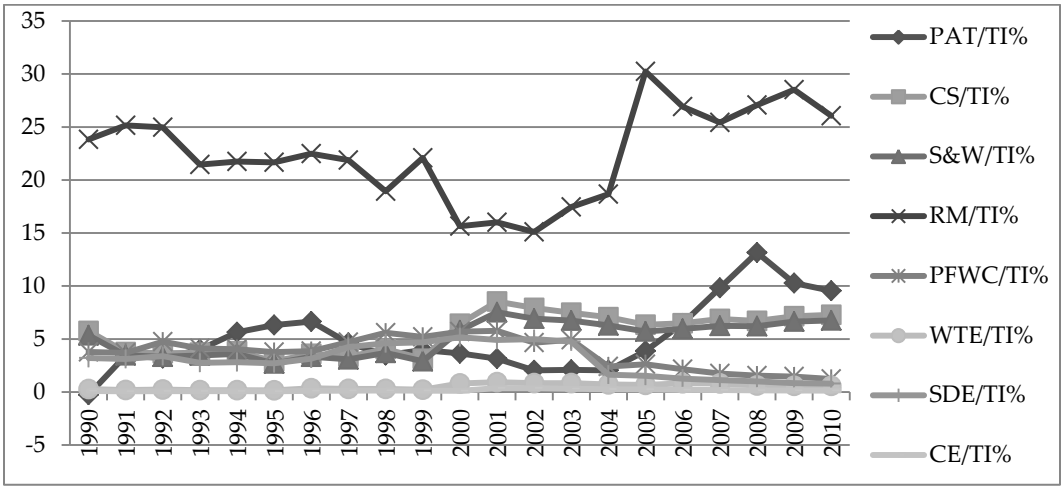
Source: Same as Chart 6

2. Changing relative shares of returns and costs in the corporate sector

In this section using company level data base we look into how costs and returns in the corporate sector changed with respect to income during the period 1990 to 2010. We consider the following parameters across industry groups: raw material expenses (RM), profit after tax (PAT), salaries and wages (S&W), Salaries, wages, bonus, ex gratia PF & gratuities paid (CS), power, fuel and water charges (PFWC), staff welfare and training expenses (WTE), selling and distribution expenses (SDE) and communication expenses (CE). The ratio of these variables to total income is computed for each industry group.

In the construction and real estate industry the ratio of raw material expenses is much higher compared to other parameters during the reference period (*Chart 9*). The relative value of raw material expenses increased sharply since 2002 although the relative cost of energy declined during the period 2000 to 2010. Sales and distribution expenses relative to income declined during the same period. The ratio of wages and salaries as well as that of combined compensation to income increased during the period 1998-2002 and then show a declining trend. Profit after tax as a ratio to total income declined during the period 1996 to 2004 and then shows a sharp rise.

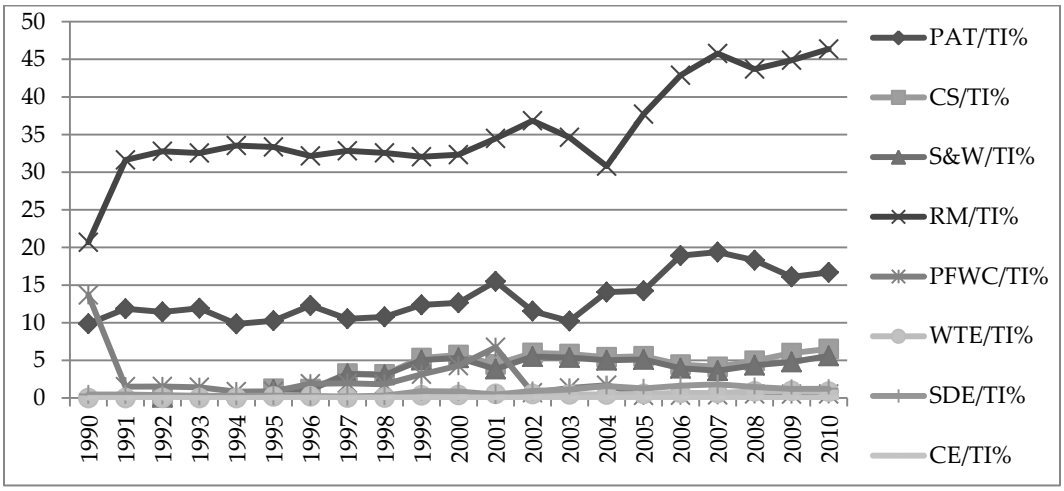
Chart 9
Relative values of expenses and profits in the construction and real estate sector



Source: Same as Chart 6

Similarly in the case of electricity the relative expenses on raw materials increased throughout the reference period (*Chart 10*). The trends in relative values of profit after tax and that of wages and salaries or the combined compensation show a mirror image. Profits increased sharply since 2003 with a simultaneous decline in the relative positions of wages and salaries. Sales and distribution charges with respect to income increased during the reference period while relative expenses on energy declined.

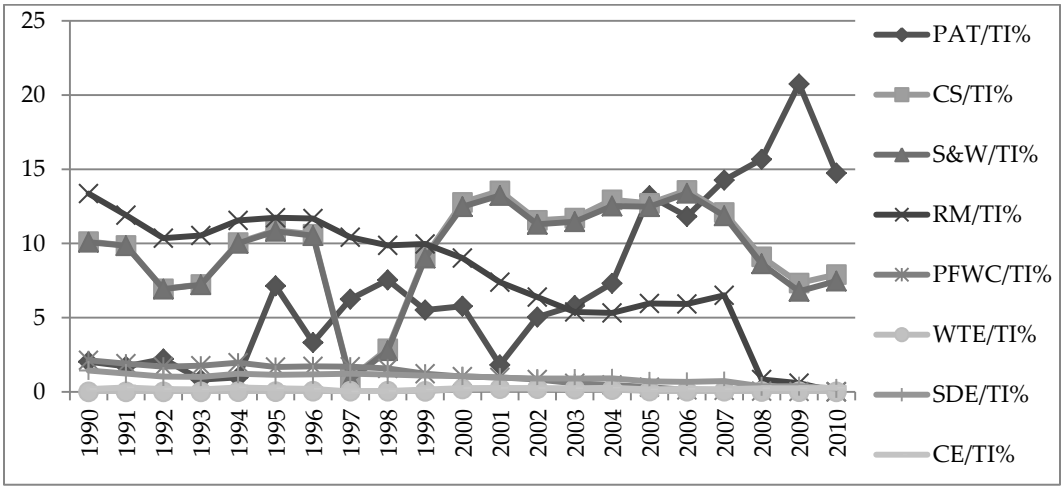
Chart 10
Relative values of expenses and profits in the electricity sector



Source: Same as Chart 6

In financial services profit after tax increased sharply since 2001 and relative expenses on raw materials, energy and sales and distribution show a secular decline (*Chart 11*). Salaries and wages as well as combined compensation show a rise since 1998 and then got stabilized till 2006 and thereafter it shows a declining trend. Expenses on staff welfare and training in this sector increased till 2001 and then it declined. Communication expenses however fluctuated around a flat trend line.

Chart 11
Relative values of expenses and profits in the financial services sector



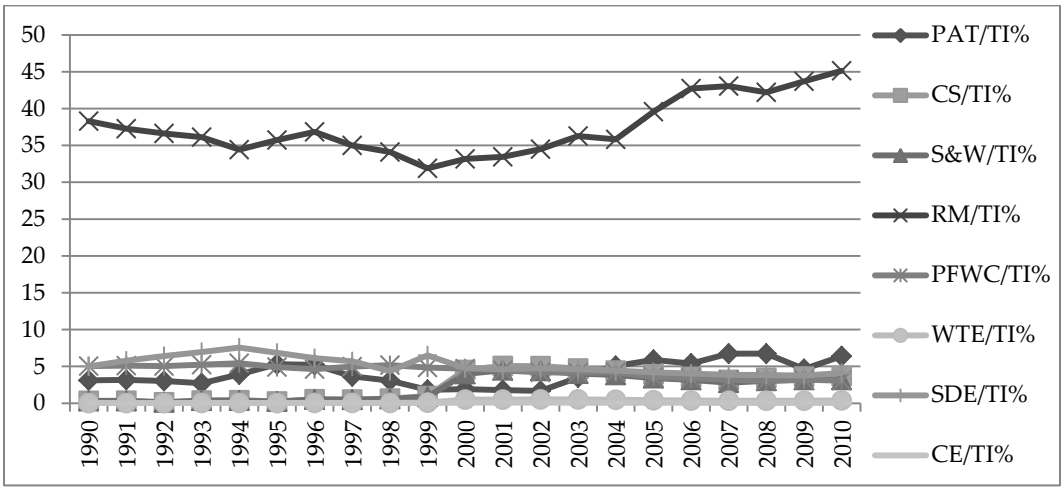
Source: Same as Chart 6

The manufacturing sector in the corporate segment shows relatively moderate trends (*Chart 12*). The expenses on raw materials show a declining trend until 1999 and it increased thereafter. Similar to electricity and construction in the case of manufacturing the ratio of expenses on raw materials to income is much higher than other expenses. Salaries and wages and combined compensation increased since 1999 and continued till 2007 and then there had been marginal decline. In manufacturing sector considering corporate segment expenses on salaries and wages is only 3.2 per cent of total income. Relative expenses on energy, sales and distribution declined over the years. However relative costs on communication increased sharply in 2000 and then declined to 4.34 per cent in 2010. Profit after tax increased sharply since 2003 amounting to 6.4 per cent of total income in 2010. Expenses on energy and sales and distribution with respect to income in the same reference year amounted to 3 per cent and 4.1 per cent respectively.

In the mining sector expenses on raw materials declined sharply until 2004 and rises thereafter (*Chart 13*). Expenditure on energy inputs show a marginal decline since 1999

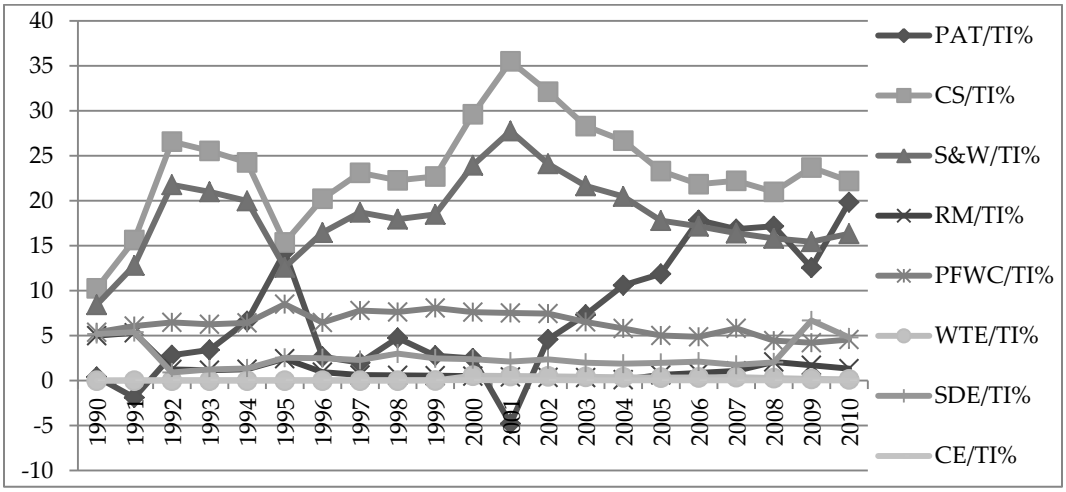
while that on sales and distribution declined till 1992 remained stable thereafter and then increased in 2007. Communication expenses in this sector although increased until 1999, it declined in the following years.

Chart 12
Relative values of expenses and profits in the manufacturing sector



Source: Same as Chart 6

Chart 13
Relative values of expenses and profits in the mining sector



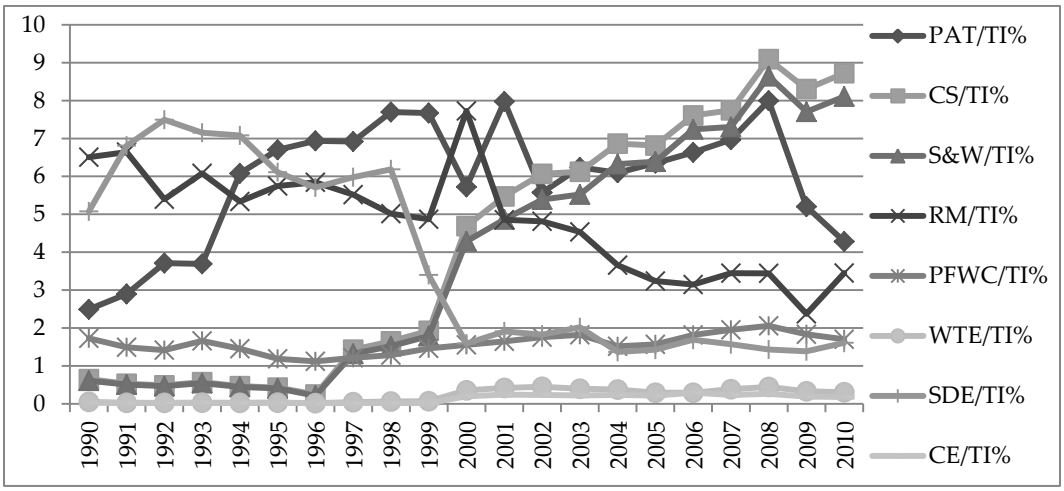
Source: Same as Chart 6

In the mining sector we once again find the clear reciprocal relation between wages and salaries and profit after tax. Wages and salaries as a proportion to income and combined compensation increased during the period 1995-2001 and this is precisely the period

when profit after tax shows a clear declining trend. Similarly downturn in wages and salaries since 2001 is being coupled with rising proportion of profit after tax to total income.

Finally in the services sector excluding financial services profit after tax as a proportion to income increased sharply until 2002 and then suffered a decline, rising once again in 2007 and declined thereafter (*Chart 14*). Relative expenses on salaries and wages as well as in combined compensation show a sharp and secular rise since 1997. Expenses on account of salaries and wages amounted to about 8.1 per cent in 2010. In services industry expenses on energy inputs show a moderately rising trend during the period 1998 to 2008 while expenses on sales and distribution show a consistent decline. Relative expenditure on staff welfare and training peaked in 1999 and then it declined secularly.

Chart 14
Relative values of expenses and profits in the services sector (other than finance)



Source: Same as Chart 6

In the following section we concentrate on the manufacturing sector in specific looking into specific parameters related to factor incomes that provide a closer view to the organized manufacturing segment.

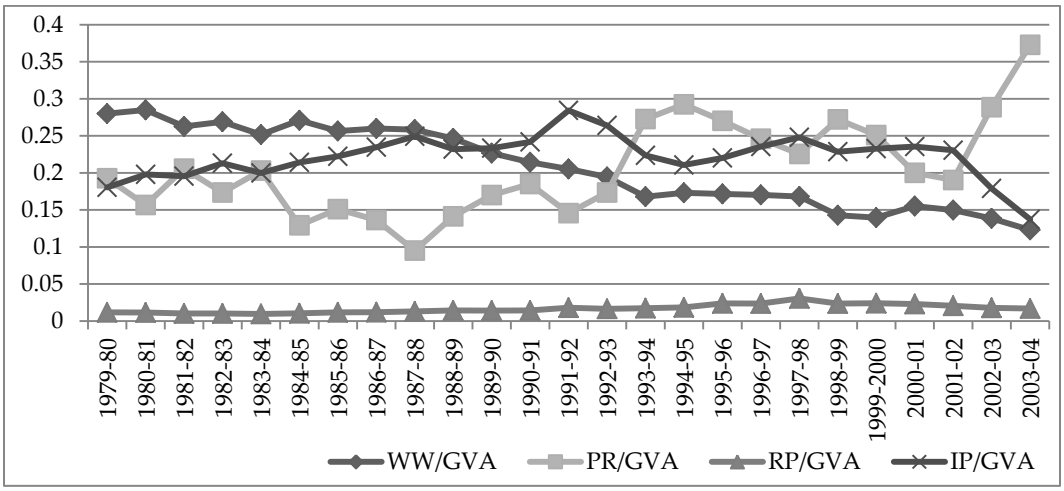
3. Manufacturing sector: A closer look

Annual Survey of Industries provides data on the manufacturing sector and at the two digit level this includes industry groups from 15 to 36, that is, 22 industry groups. However in this section we bring to the fore only the trends relevant to the sector as a whole and in the following section we review the selected parameters by industry

groups. The distribution of value added in the manufacturing segment and the nature of capital-labour combinations emerging in the sector obviously has significant impact on the whole economy. The important aspect however is whether this changes do have any relation to policy regimes in the sense do they reflect any breaks correlated to the impacts of liberalization policies pursued in India since 1991.

We compute the share of wages, profits, rent and interest in the gross value added over the period 1979-80 to 2003-04 (*Chart 15*).

Chart 15
Factor shares in gross value added over the years



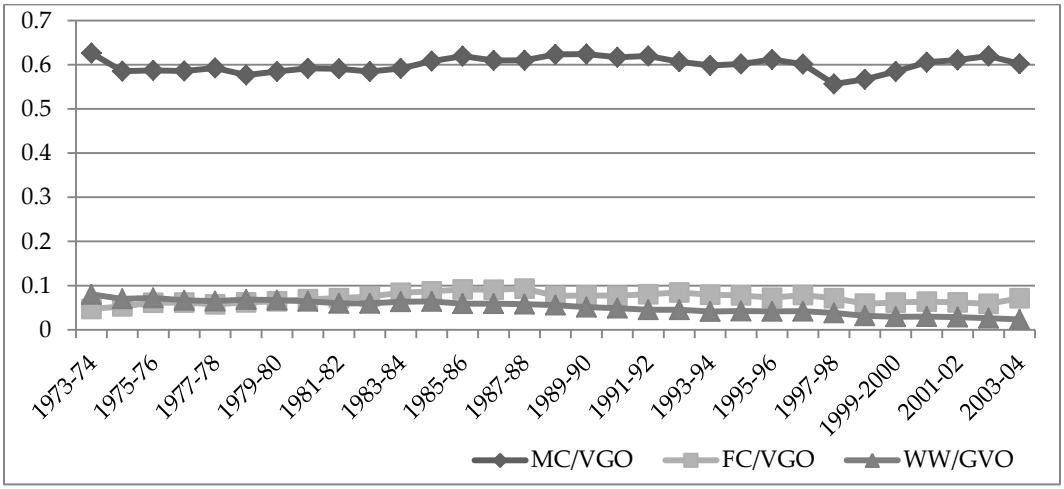
Source: ASI data, EPWRF

We find the broad trends of factor shares that in a way reflect the ex post claims of contesting classes. Wages, that is the claims of workers declined consistently over the years while the share of profits increased sharply since 1987-88. The share of profits in gross value added increased from about 19.3 per cent to 37. 3 per cent during the reference period while share of wages declined from 27.9 per cent to 12.3 per cent during the same period. However what seems to be significant that the share of wages shows a secular decline which perhaps suggests that the decline of labour's share hardly show any periodic break in terms of policy regimes rather in the organized segment the labour started losing well before the introduction of reforms. The share of rents remained more or less stable with a marginal increase in 1997-98. During the period 1995-96 to 2001-02 the share of rents in value added was relatively high, more than two per cent and then it came down to 1.7 per cent in 2003-04. The share of interest in value added increased since

1979-80, it reached a peak of about 28.4 per cent in 1991-92 and then it declined to about 13.7 per cent in 2003-04.

In *chart 16* we show the share of input costs in gross output. The ratio of material costs to output remained more or less same over the years and this hovered around 60 per cent during the whole period. The ratio of fuel costs to output increased during the initial period, it reached a peak of about 9.1 per cent in 1985-86 and declined thereafter touching 7.1 per cent in 2003-04. Labour costs in relation to value of output declined from about 8 per cent in 1973-74 to 2.4 per cent in 2003-04 and the decline was quite consistent in this regard as well.

Chart 16
Ratio of input costs to gross value of output

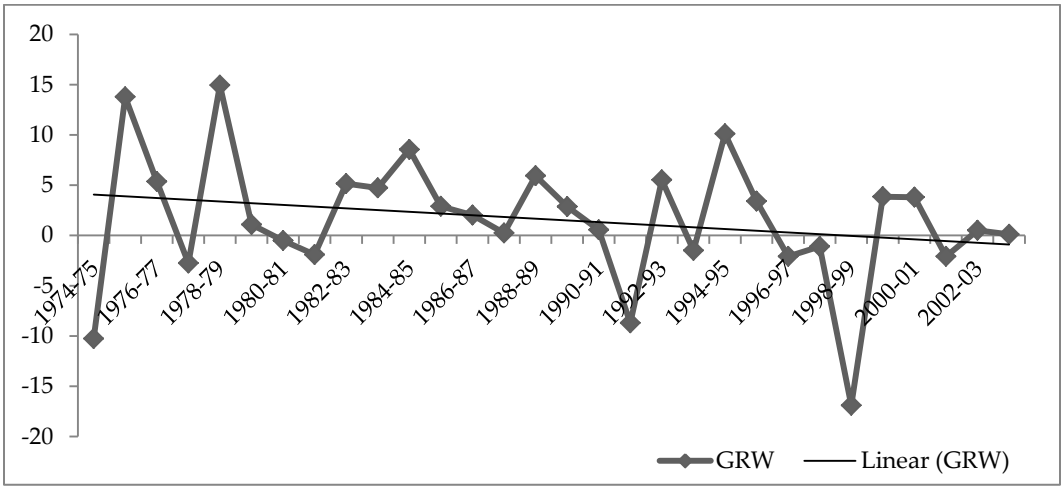


Source: same as Chart 15

We compute the real wages of workers by deflating the nominal wages by consumer price index of industrial workers. We construct a price index series with the base year 1960 and deflate the wage figures from 1973-74 to 2003-04. The real wages of workers has increased over the years although the growth of real wages shows a declining trend as shown in *Chart 17*.

In order to capture the relation between wage share and labour productivity we compute gross value added per worker at constant prices. The value added figures are deflated by the GDP deflators computed from national accounts series. The base year is set at 2004-05 prices and the indexes are computed from GDP series given in current and constant prices.

Chart 17
Growth of real wages in the manufacturing sector

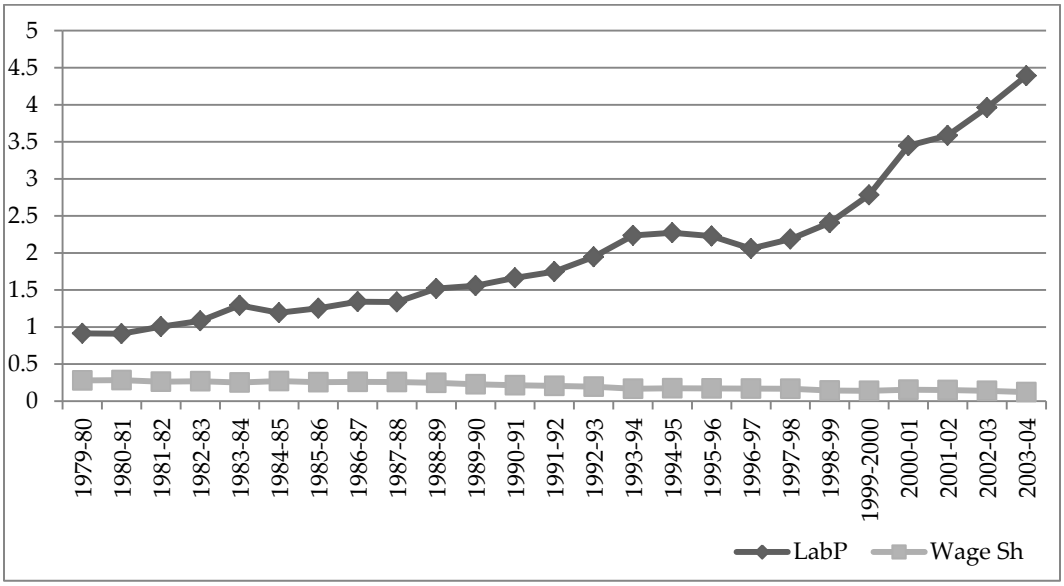


Source: same as Chart 15

The gross value added per worker at constant prices gives us a measure of labour productivity and that shows a clear increasing trend over the years (*Chart 18*). Therefore despite the fact of a steep rise in labour productivity of workers, the share of real wages in gross value added declined. This perhaps suggests that the labour kept on losing its share in the gross value added in the past three decades not because of any decline in labour productivity rather it is because of the decline in the bargaining strength of the workers *vis-à-vis* capital. Furthermore if we compute the ratio of productive capital to gross value added we find a near horizontal trend although the share of profits in value added increased sharply since 1987-88. The declining share of wages could further be explained by rising capital intensity in the ASI sector captured by the ratio of productive capital to number of workers. The nominal value of productive capital is once again deflated by the GDP deflators to get the figures in constant 2004-05 prices (*Chart 19*). The capital intensity of manufacturing has increased over the years and the strong correlation in the growth of labour productivity and capital intensity also shows that the rise in labour productivity can be explained by the increasing use of capital intensive technologies but the gap between the growth of capital intensity and that of labour productivity reflects the fact of creating capacities which may not be productivity enhancing (*Chart 20*). This is of course also linked to the changing composition of work force within the manufacturing segment.

Chart 18

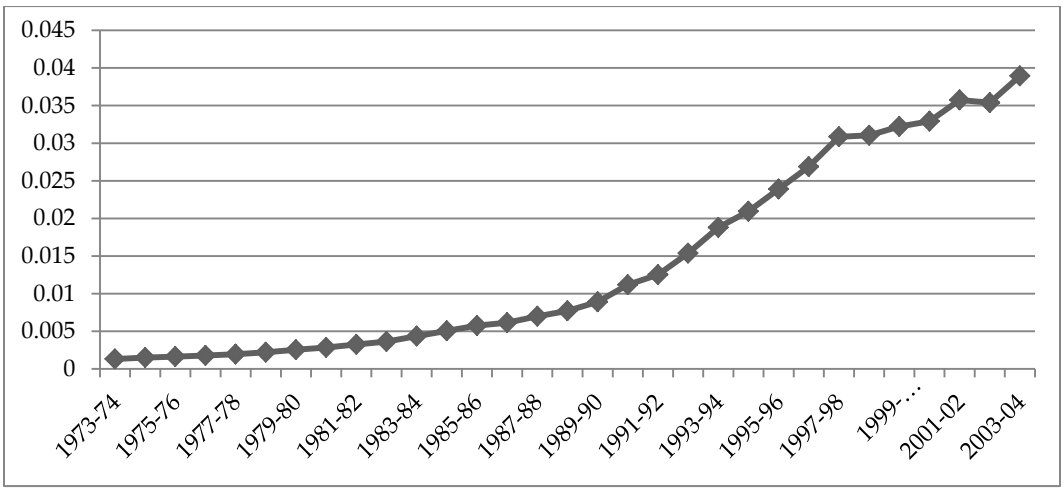
GVA at constant prices per worker and share of wages in GVA



Source: same as Chart 15

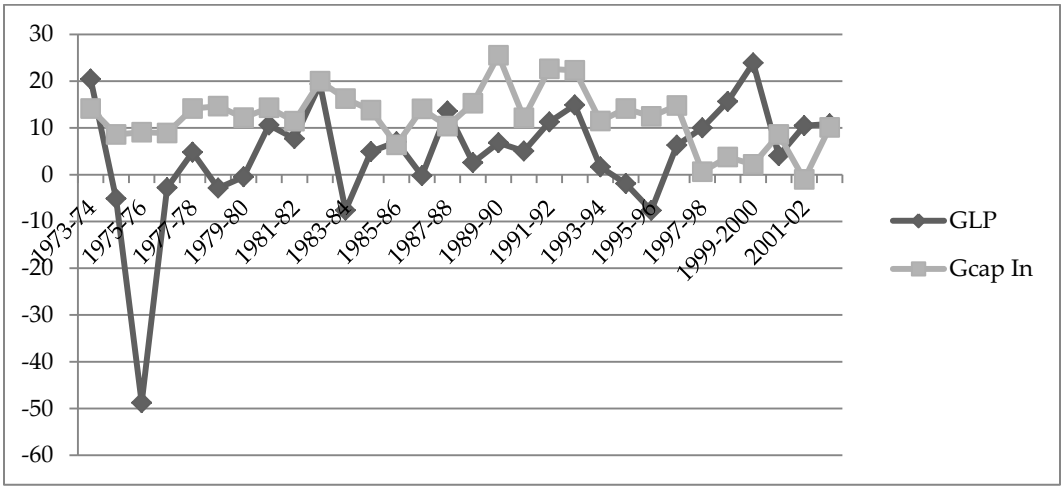
Chart 19

Value of productive capital per worker at constant prices



Source: same as Chart 15

Chart 20
Growth of labour productivity and capital intensity



Source: same as Chart 15

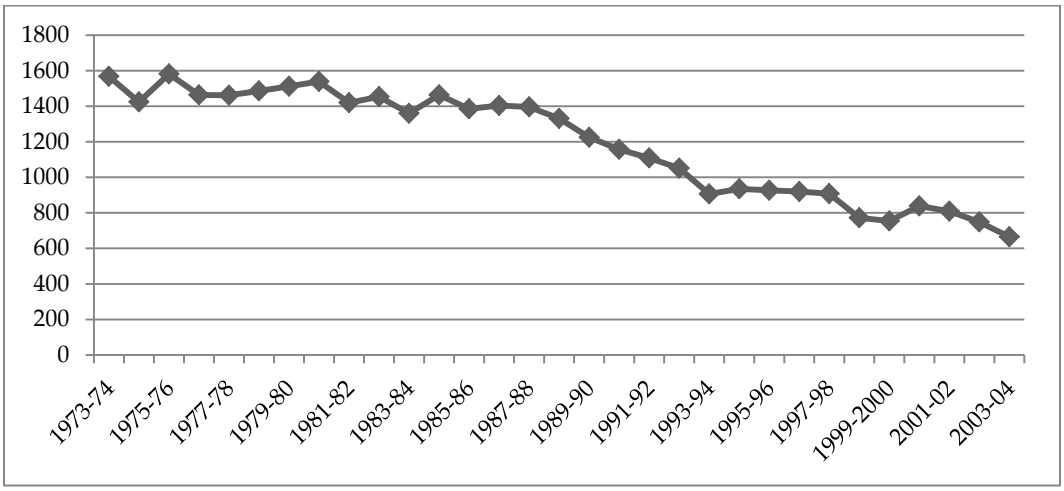
The share of workers within total persons employed within ASI sector shows a declining trend although the share increased since 1999-2000. Increasing use of technology in the manufacturing segment might have resulted a rise in the share of salaried employees although designations are sometimes altered to induce greater flexibility in the work force. As a result of such change in the composition of workforce the share of wages in total emoluments show a consistent decline. Finally we compute the unit labour cost in the manufacturing segment as a whole which gives us a measure of competitiveness over the years. The underlying argument however assumes that labour is the only factor of production, the return of which should necessarily be compromised in order to attain greater competitiveness.

Unit labour cost is defined as the ratio of nominal wage rate to labour productivity and labour productivity is measured as some quantity of output produced per worker. At the level of aggregation and in the context of comparing varied output it is difficult to arrive at a comparable quantity and as proxy deflated value added is used (Felipe and Hasan, 2006 pp. 124). The measure tells us the amount of money to be paid to a worker for producing a comparable unit of output and so as the argument goes more the economy becomes competitive the less should be the unit labour cost.

It is shown in *Chart 21* that unit labour cost declined by about 58 per cent during the reference period. The inter-temporal decline in unit labour cost shows that labour has already lost more than half of what it had got four decades back in return for producing a

comparable unit of output and this precisely raises question to the notion of competitiveness that solely depends on pushing down wages. The rise in labour productivity with less than proportionate increase in wages result in a decline of unit labour cost but similarly one can think of increasing competitiveness by rising capital productivity with a less than proportionate increase in profit rate. Since unit capital cost is directly proportional to profit share in the value added, the rise of which perhaps implies that unit capital cost has increased over time.

Chart 21
Unit labour cost in manufacturing over the years



Source: same as Chart 15

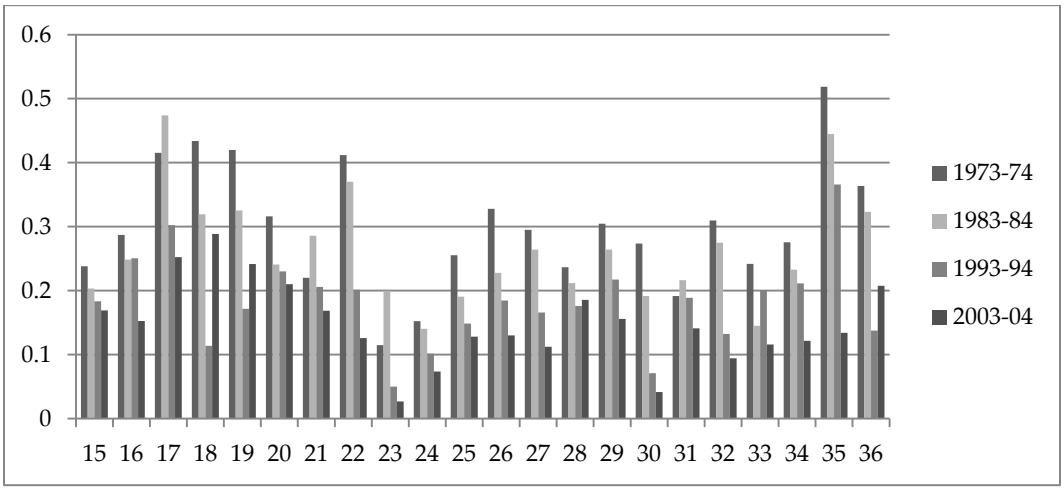
In the next section we investigate the pattern of changes of some of the selected parameters in the case of industry groups within manufacturing.

4. Trends in factor shares by industry groups within manufacturing

Annual Survey of Industry provides data of various industry categories of which at the 2-digit level 15 to 36 refers to industrial activities within manufacturing. We compute some of the parameters reported for the whole sector in the previous section for this twenty-two industry groups, especially to see the specifics of the trends in various industries. Although we computed the trends for each year for which data is available but to make it simple in order to represent the trends across time we chose data for four time points so as to capture the glimpse of changes that took place during the whole reference period.

Chart 22 shows the share of wages in gross value added within industry groups. We find that the average share in 1973-74 was 30 per cent and that has come down to 14.9 per cent in 2003-04. In the initial reference year industries that show a labour's share in gross value added more than 40 per cent are related to textiles, garment, leather and printing and reproduction of recorded media and manufacture of other transport equipment (17,18, 19, 22 and 35). In 2003-04 industries that show relatively high labour share in gross value added that is more than 20 per cent are precisely the same textile, garments and leather but the addition being manufacture of furniture (17,18, 19,36). Industries that show very low relative share of wages are related to chemical industries in both 1973-74 and 2003-04. The sectors that show sharp decline in labour share are also those where the labour's share was relatively high in the initial period but it also declined in the case of industries publishing, manufacture of office and computing machinery, media related equipments and apparatus and other transport equipments (17,18, 22,30,32, 35).

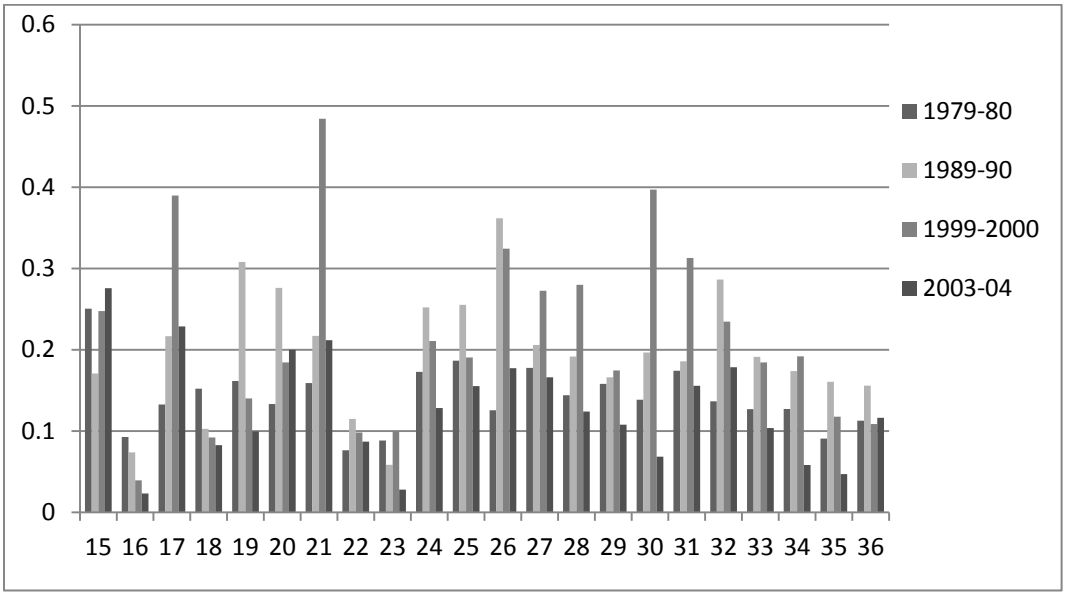
Chart 22
Share of wages in gross value added within industry groups



Source: same as Chart 15

Similarly we computed the share of interest paid in gross value added by industry groups (*Chart 23*). In 1973-74 and also in 2003-04 the industry group that shows highest share of interest paid in gross value added is agriculture, hunting and related service activities. The average share across industries in the initial period was 14.2 per cent and that has declined to 12.8 per cent in 2003-04. In 2003-04 the industries apart from agriculture that show higher share of interest paid are manufacture of food and beverages, textiles, wood products (excluding furniture) and manufacture of paper and paper products (15, 17, 20, 21).

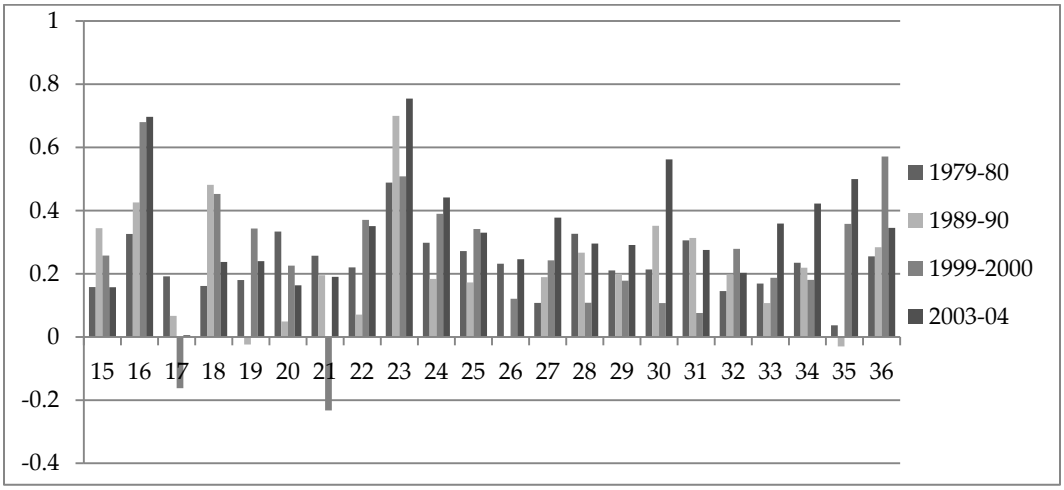
Chart 23
Share of interest paid in gross value added within industry groups



Source: same as Chart 15

Chart 24 shows the share of profits in gross value added by industry groups. The share in 1979-80 had been higher in the case of manufacturing related to tobacco products, wood products, coke, refined petroleum products and nuclear fuel, fabricated metal products and electrical machinery apparatus (16, 20, 23, 28, 31). The average share across industries was 23.3 per cent while the industries mentioned had profit as share of value added more than 30 per cent. In 2003-04 the average share was 33.8 per cent and industries that could reap as high as 50 per cent or more of gross value added were again manufacture of tobacco products, coke, refined petroleum products and nuclear fuel, manufacture of office and computing machinery and other transport equipments (16, 23, 30, 35). During the period 1999-2000 and 2003-04 profit share declined in seven out of 22 industry groups. The rate of increase in the profit share as reflected by the slope of the trend line drawn for the reference period 1979-80 to 2003-04 had been in the case of manufacture of tobacco products and other transport equipments (16, 35). The share of rent paid in gross value added was 1.4 per cent on an average in 1979-80 across industries and the average marginally increased to 1.97 per cent in the year 2003-04. In the two reference periods 1979-80 and 2003-04 industries having relatively higher share of rent paid to value added were apparel manufacturing, leather products, non-metallic mineral products and production of office and computing machinery (18, 19, 26, 30).

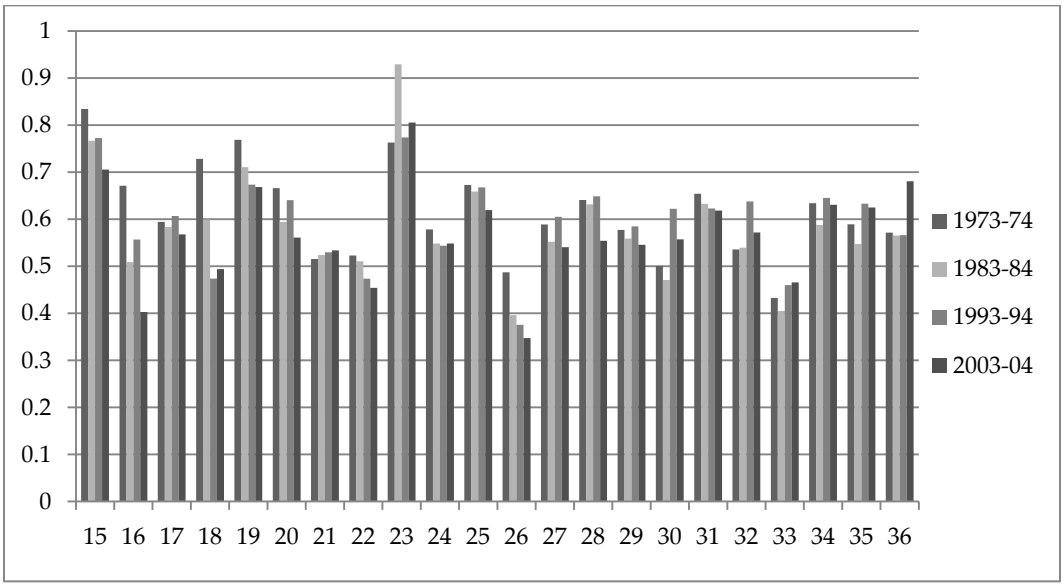
Chart 24
Share of profit in gross value added within industry groups



Source: same as Chart 15

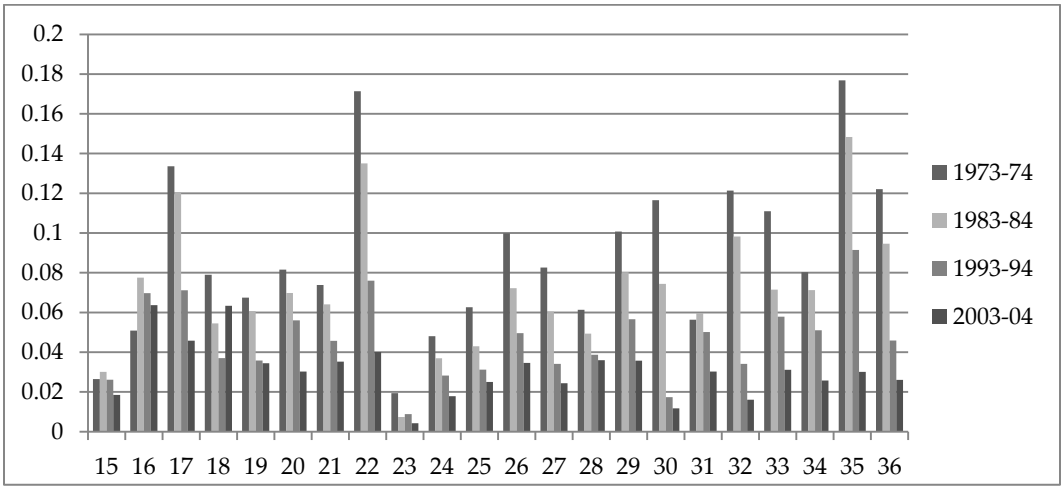
In *chart 25 and 26* we show the ratio of material cost and labour cost to value of output respectively.

Chart 25
Ratio of material cost to value of output by industry groups



Source: same as Chart 15

Chart 26
Ratio of labour cost to value of output by industry groups



Source: same as Chart 15

In 1973-74 the industries that show material costs more than 70 per cent of the value of output were manufacturing of food products, garments, leather products, coke refined petroleum and nuclear fuel. The average of the ratio across industry groups in 1973-74 was 61.5 per cent that declined to 56.8 per cent in 2003-04. However the share of material costs increased in 2003-04 compared to 1993-94 in the cases of printing and reproduction of recorded media, coke, petroleum, chemical products, medical instruments, watches and clocks and manufacture of furniture.

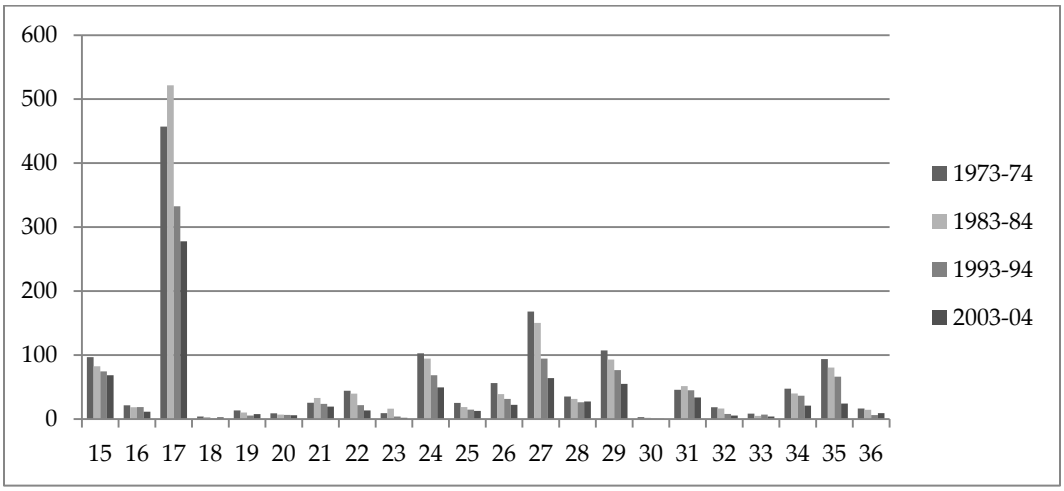
Similarly, if we compute the ratio of labour costs to value of output the average comes to be 8.9 per cent for 1973-74 and that has declined to 3.1 per cent in 2003-04. The ratio in the initial period was higher, that is, more than 12 per cent in the case of textiles, publishing and printing, manufacturing of media equipments and other transport equipments. The ratio declined consistently for the four reference years in 20 out of 22 industry groups.

We compute gross value added at constant prices per worker by industry groups. This gives us a proxy of labour productivity. The average of labour productivity across industry groups increased by 3.76 times during the period 2003-04 compared to 1973-74. Industries showing relatively higher labour productivity during 1973-74 are manufacture of coke, petroleum and nuclear fuel, chemical products, electrical machinery and manufacture of motor vehicles (23, 24, 31, 34). The labour productivity has been higher in 2003-04 for petroleum and chemical products, manufacture of basic metals and office accounting and computing equipments (23, 24, 27, 30). However the ratio of productive

capital per worker at constant prices on an average increased by about 29.5 per cent during the period 1973-74 to 2003-04. The industries that show relatively higher capital intensity manufacture of chemicals, basic metals, accounting and computing machinery, and media equipments (24, 27, 30, 32). The share of workers out of total persons employed declined in 20 out of 22 industry groups over the same reference period, however the share declined sharply in the case of manufacture of tobacco products and publishing and printing industry (16, 22). The reasons behind the decline of share workers might be the following: a) with increasing use of capital intensive technology, the share of workers would decline in the number of employed persons; b) the share also declined because of manipulation of designations often done by employer to increase the share of non-unionized workers in the workforce; c) it could also be because of increasing share of self-employed enterprise within specific industry groups and that might also reduce the share of workers in the respective industry groups.

Chart 27 shows the unit labour costs for the 22 industry groups and found that on an average it declined by more than half during the period 1973-74 to 2003-04. Unit labour costs have been relatively higher in the case of manufacture of food products and beverages, textiles, basic metals and machinery and equipment.

Chart 27
Unit labour costs by industry groups



Source: same as Chart 15

In the following section we discuss how the factor shares of labour are distributed within the workforce by gender and categories of skills. This is precisely to see how wages varied across industry groups and the trends in skill premium across industries.

5. Trends in wage-gap and skill premium

Skills refer to human capacities obtained by individual workers or to the specific demands that individual jobs require. Although it is difficult to define skill in a way that captures all its dimensions but studies on skill begin with the assumption that there is an average skill requirement associated with each job in the economy. This however does not imply that the functional requirements of a specific job are always congruent to the hiring requirements of the same. Convergence and divergence in this regard basically depends upon the demand and supply of skills in a specific labour market and also on the cost of screening. Globalisation narratives presume that there has been a rise in the demand for skills across countries and sectors because of increased use of technology. If skill requirements increase other things remaining same, one should expect a higher equilibrium price for skilled labour. Differential returns to skill are usually explained by the 'mismatch' between demand and supply—that is a rise in the relative demand for skills driven by technology/trade outpacing changes in the relative supply. The underlying assumption in these propositions is that there is a complementary relation between skills and technology. Skill in a sense evolves as a social category that also draws in political and ideological determinations often reflected in biases such as those that privilege mental over manual work and indulges in proxies such as educational attainments that might not always reflect skills. In the context of developing countries this is even more true since we find around large number of people working in different occupations with great proficiency but might not have any formal training or education. And hence could not be captured in the narrow concept of 'skilled workers' defined in terms of educational attainments. However it is quite difficult to get data that appropriately captures all the dimensions of skill.

NSSO provides data on proportion of workers by educational categories within industry groups and also wages per day received by workers having different education levels. In this paper we define skilled workers those attaining education equivalent to secondary level and above and those below are considered as unskilled workers. In *Table 1 and 2* we show the ratio of male to female wages by education categories and industry groups in rural and urban areas respectively. We see that male workers in the rural segment receive 1.6 times the wage of female workers if we take account of all the industry groups and all categories of workers. The ratio has been relatively higher in 2009-10 in the cases of all categories of services and also in manufacturing 1. If we compare by education categories the male-female wage gap had been highest in the case of non-literate workers that is male wages in rural areas are more than double that of female wages. The gap is lowest in the case of workers having diploma/certificates. For the category of graduate and above the male wage is about 1.4 times to that of female wages in the rural areas.

Table 1

Ratio of male to female wages by education categories and industry groups (Rural)

	not lit	*lituptoM*	*S&HS*	*dip/cert*	*grad &ab*	*all*
agriculture (01-05)	1.293	1.559	1.066	0.180	2.078	1.498
mining (10-14)	1.015	5.126	0.897			0.952
manufacturing 1 (15-22)	2.481	1.893	1.505		0.980	1.991
manufacturing 2 (23-37)	2.095	1.561	1.553	4.160	0.929	1.733
electricity, gas water (40-41)	2.677	0.894	1.076	1.107	1.024	0.961
construction (45)	1.313	1.586	0.679	1.920	0.668	1.393
trade (50-55)	2.686	1.400	2.238	2.448	2.092	1.796
transport & storage etc. (60-64)	1.069	1.124	1.671	0.554	0.750	1.035
services1 (65-74)	0.323	1.149	1.785	1.881	2.477	2.020
services2 (75-93)	3.229	2.959	2.322	1.310	1.529	1.988
all	2.073	1.993	1.763	1.222	1.409	1.598

Source: computed from NSS report, 2009-10

Table 2

Ratio of male to female wages by education categories and industry groups (Urban)

	not lit	*lituptoM*	*S&HS*	*dip/cert*	*grad&ab*	*all*
agriculture (01-05)	1.070	2.407	1.073		4.458	3.367
mining (10-14)	1.507	1.703	0.937	4.290	0.393	1.208
manufacturing 1 (15-22)	1.792	1.376	1.467	4.813	1.503	1.777
manufacturing 2 (23-37)	1.206	1.308	1.411	2.018	1.276	1.170
electricity, gas water (40-41)	0.544	1.081	1.368	1.340	1.005	0.880
construction (45)	1.799	0.913	3.001	1.126	0.701	0.670
trade (50-55)	1.607	1.500	1.413	0.795	1.212	1.112
transport & storage etc. (60-64)	1.015	0.619	1.035	0.774	1.182	0.786
services1 (65-74)	1.588	1.283	0.613	1.865	1.198	1.075
services2 (75-93)	1.955	1.946	1.682	1.328	1.335	1.416
all	1.692	1.607	1.234	1.302	1.270	1.221

Source: computed from NSS report, 2009-10

In the urban segment the male-female wage gap is relatively less compared to that in the rural segment. The male wage considering all industries and all categories of education is 1.2 times that of female wage. The wage gap is relatively higher in agriculture, manufacturing 1 and services 2 compared to other industry groups. The female wage is higher in the urban segment compared to the male in industries such as electricity, gas, water; construction and transport and storage etc. By education categories the wage gap seems to be highest for non-literate workers and lowest in case of workers having

secondary and higher secondary education. In the urban segment the wage gap between male and female workers having education graduate and above is less than that for the rural segment.

Table 3 and 4 shows the skill premium for skilled workers over the years by industry categories. NSSO provides data on proportion of workers by educational categories within industry groups and also wages per day received by workers having different education levels. We define skilled workers those attaining education equivalent to secondary level and above and those below are considered as unskilled workers. The wage premium for skilled workers defined as the average relative wages of skilled workers with respect to unskilled workers in various industries.

Table 3
Skill premium for workers by industry categories over the years (Rural)

	Rural Male				*Rural Female*			
	1993-94	*99-2000*	*2004-2005*	*2009-10*	*1993-94*	*99-2000*	*2004-2005*	*2009-10*
agriculture (01-05)	2.774	3.824	2.923	2.292	2.24	3.661	2.398	2.044
mining (10-14)	1.107	1.425	1.697	1.040	1.193	3.508	0.28	
manufacturing 1 (15-22)	1.878	1.774	1.989	1.778	1.568	1.277	2.173	3.426
manufacturing 2 (23-37)	1.584	1.839	4.023	1.898	2.479	2.993	2.906	3.178
electricity, gas water (40-41)	1.362	1.482	1.642	1.251	2.878	2.619	1.16	1.615
construction (45)	2.27	1.702	1.799	1.883	2.811	2.725	1.875	3.994
trade (50-55)	1.337	1.629	1.476	1.593	1.596	0.645	2.704	1.332
transport & storage etc. (60-64)	1.62	1.631	1.77	1.616	2.066	1.213	1.9	1.766
services1 (65-74)	2.431	1.641	2.645	2.176	4.089	1.394	1.253	0.609
services2 (75-93)	2.053	1.781	1.938	1.754	3.352	0.815	3.284	2.979
all	2.204	2.267	2.502	2.266	3.097	1.417	1.842	3.001

Source: NSS reports, various years

Comparing figures for 2009-10 with that of 2004-05 we find that in the rural segment the skill premium declined in almost all the sectors for the male workers while for the female workers it increased. The skill premium had been relatively higher for male workers in agriculture, services 1and manufacturing 1. For female workers it was relatively higher in construction and manufacturing.

Table 4
Skill premium for workers by industry categories over the years (Urban)

	Urban Male				*Urban Female*			
	1993-94	*99-2000*	*2004-2005*	*2009-10*	*1993-94*	*99-2000*	*2004-2005*	*2009-10*
agriculture (01-05)	2.904	4.177	3.007	3.246	3.265	1.554	2.323	2.991
mining (10-14)	1.458	1.005	2.242	1.402	2.17	1.168	4.634	4.208
manufacturing 1 (15-22)	1.86	1.958	2.031	2.323	2.88	3.73	3.496	2.429
manufacturing 2 (23-37)	2.125	2.497	2.503	3.200	2.747	2.398	3.306	3.093
electricity, gas water (40-41)	1.802	1.613	2.445	2.566	3.756	1.911	2.879	1.849
construction (45)	2.242	2.214	2.459	2.444	3.082	3.584	2.096	2.895
trade (50-55)	2.079	2.318	2.313	1.942	2.445	3.416	2.928	2.360
transport & storage etc. (60-64)	1.731	1.925	2.353	2.647	1.63	2.035	2.733	1.742
services1 (65-74)	2.435	2.588	3.629	2.965	3.461	3.783	3.268	4.394
services2 (75-93)	2.067	1.902	2.115	2.199	3.007	2.219	2.226	2.944
all	2.095	2.334	2.613	1.799	2.981	3.273	3.697	1.928

Source: NSS reports, various years

In the urban segment we find that the skill premium declined sharply both for male and female workers comparing 2004-05 and 2009-10. However the decline had been higher for urban males. The decline in skill premium during 2009-10 might be because of the effect of global recession that created unemployment and lesser demand for skills. The skill premium in the urban segment for male workers had been relatively higher in the cases of agriculture and manufacturing 2 while for female workers higher premium is received in services 1 and manufacturing 2.

In this context we also compute the changes in skill premium across occupation categories as shown in *Table 5*.

Table 5
Skill Premium for Rural and Urban Male Skilled Workers by occupation Categories

Occupation group	*Rural Male*		*Urban Male*		*Rural Male*	*Urban Male*
	1999/2000	*2004/05*	*1999/2000*	*2004/05*	*99/00 to 04/05 +/-*	*99/00 to 04/05 +/-*
Nursing and medical workers	2.05	1.633	1.813	1.735	-0.417	-0.08
Teachers	1.218	1.27	1.442	0.857	0.052	-0.59
Rest of professional, technical workers	2.932	3.084	2.478	4.324	0.152	1.85
Professional and Technical Workers	1.776	1.77	2.111	2.925	-0.006	0.81
Administrative and Executive Workers	NA	6.921	3.154	5.247	…	2.09
Clerks, typists, cashiers oth.	1.635	1.635	1.587	1.608	0	0.02
Transport conductor telephone operator	1.264	1.759	1.69	2.321	0.495	0.63
Clerical and Related Workers	1.605	1.646	1.612	1.838	0.041	0.23
Merchants, shopkeepers, Wholesale and retail dealers	1.916	2.72	2.065	3.774	0.804	1.71
Rest of sales workers	1.506	1.559	1.833	2.159	0.053	0.33
Sales Workers	1.519	1.539	1.843	2.186	0.02	0.34
Housekeeper, maid, caretaker Sweeper	1.537	1.063	1.397	1.371	-0.474	-0.03
Launderers, hair dressers	NA	0.752	1.047	1.354	…	0.31
Protective workers, Fire, Police	1.828	1.956	2.135	2.384	0.128	0.25
Service Workers, Shop and Sales Workers	1.848	2.036	2.051	2.171	0.188	0.12
Cultivator, general tenant	2.945	1.041	2.481	4.676	-1.904	2.20
Agricultural labourers	NA	0.541	0.192	2.358	…	2.17
Plantation labourers	2.049	1.263	0.902	…	-0.786	…
Rest of farmers and fisherman	2.525	2.357	2.494	2.514	-0.168	0.02
Farmers and Fisherman	3.135	1.938	1.31	2.769	-1.197	1.46
Miners, quarrymen, well drille	1.482	1.441	1.18	1.496	-0.041	0.32
Metal processors	1.034	1.255	2.264	2.532	0.221	0.27
Spinners, weavers, knitters	1.317	1.407	1.707	2.085	0.09	0.38
Food and Beverage Processors	1.524	1.473	2.202	2.025	-0.051	-0.18
Tailors, dress Makers, sewers	2.411	1.656	1.592	1.599	-0.755	0.01
Stone cutters blacksmith Machinery fitters	1.293	1.8	1.921	1.875	0.507	-0.05
Brick layers, construction wks	1.15	1.274	2.084	1.884	0.124	-0.20

Occupation group	*Rural Male*		*Urban Male*		*Rural Male*	*Urban Male*
	1999/2000	*2004/05*	*1999/2000*	*2004/05*	*99/00 to 04/05 +/-*	*99/00 to 04/05 +/-*
Transport equipment operators (Manual and Mech	1.566	1.565	1.747	1.676	-0.001	-0.07
	0.795	1.087	1.488	1.573	0.292	0.09
Rest of craft, plant, machine operators, assemblers, elementary occupations	1.609	1.52	1.814	1.72	-0.089	-0.09
Production and Related Workers	1.47	1.524	1.826	1.755	0.054	-0.07
all	2.267	2.502	2.334	2.613	0.235	0.28

Source: Same as Table 4

In the case of professional and technical workers during the reference period 1999/2000 to 2004/2005 the skill premium declined for rural workers but it increased in the case of urban workers. Returns to skill increased sharply for urban male workers involved in administrative and executive works. In the sphere of clerical and related works both the rural and urban skilled workers experienced a rise in the skill premium over the years. In occupations such as sales and service works the skill premium increased in both the rural and urban segment. In the rural segment skill premium declined in occupations related to farming and fishing while it increased in the urban areas. Skill premium declined for both rural and urban workers involved in activities such as craft, plant and machine operators and assemblers. Occupations related to tailoring, dress making and sewing experienced a rise in the skill premium in the case of urban workers but it declined in the case of rural workers. In the construction sector we find opposing trends in skill premium for the rural and urban workers, it increased for the rural workers and declined in urban areas. By occupation categories the broad trend that emerges in regard to skill premium is interesting in the sense that in the urban segment the skill premium declined in most of the manufacturing and in some of the service activities while it increased sharply in the case of administrative and executive workers. In the rural segment occupations related to agriculture experienced decline in the skill premium while there seems to be mixed trends in other occupations.

In 2009-10 we compute the skill premium by occupation categories re-defined (*Table 6*). It becomes difficult to compare figures for this year with those from earlier survey years because the occupation categories reported in this year is different from earlier years. However in 2009-10 in the case of rural male the skill premium had been higher for managers and professionals associated to health and physical and engineering science related occupations (13, 22, 31). For rural females higher skill premiums are found for managers and professions associated to teaching (13, 23, 33, 34). In the urban segment for

males the skill premium was relatively higher for corporate managers, general managers and other professionals (12, 13, 24). In the case of females the occupations that fetched higher skill premiums are corporate managers, teaching professionals, other professionals, models sales person and demonstrators (12, 13, 23, 52).

Table 6
Skill premium for skilled workers in various occupation categories, 2009/10

		RM	*RF*	*UM*	*UF*
1	**Legislators, Senior Officials and Managers**				
11	Legislators and Senior Officials	2.906	19.734	3.595	5.101
12	Corporate Managers	2.859		4.686	20.418
13	General Managers	5.236		7.458	
Division 1	**Professionals**	2.405	24.711	4.433	5.114
21	Physical, Mathematical and Engineering Science Professionals	2.780		1.732	2.775
22	Life Science and Health Professionals	7.507	1.610	0.830	3.016
23	Teaching Professionals	0.765	3.651	3.151	11.290
24	Other Professionals	4.837	1.599	7.032	4.396
Division 2	**Technicians and Associate Professionals**	2.345	1.542	2.306	2.523
31	Physical and Engineering Science Associate Professionals.	3.916	2.906	3.692	5.915
32	Life Science and Health Associate Professionals	1.467	1.821	2.333	1.384
33	Teaching Associate Professionals	1.062	3.976	1.579	3.651
34	Other Associate Professionals	1.870	3.240	3.804	4.063
Division 3	**Clerks**	1.211	3.214	3.040	2.040
41	Office Clerks	1.511	1.732	1.318	1.594
42	Customer Services Clerks	0.765	2.492	1.549	1.358
Division 4	**Service Workers and Shop & Market Sales Workers**	1.389	1.614	1.412	1.555
51	Personal and Protective Service Workers	1.935	1.652	2.181	2.468
52	Models, Sales Persons and Demonstrators	1.210	1.645	1.642	7.101
Division 5	**Skilled Agricultural and Fishery Workers**	1.603	1.471	1.930	4.716
61	Market Oriented Skilled Agricultural and Fishery Workers	2.155	0.921	2.569	0.000
62	Subsistence Agricultural and Fishery Workers	0.378	2.619	5.829	
Division 6	**Craft and related Trades Workers**	2.231	1.693	2.657	0.000
71	Extraction and Building Trades Workers	1.494	4.010	1.822	0.591
72	Metal, Machinery and Related Trades Workers	2.062	0.593	1.965	4.272

		RM	*RF*	*UM*	*UF*
73	Precision, Handicraft, Printing and Related Trades Workers	1.789	1.371	2.335	5.077
74	Other Craft and Related Trades Workers	1.911	5.796	1.549	0.469
Division 7	**Plant and Machine Operators and Assemblers**	2.011	4.967	1.901	3.313
81	Stationary-Plant and Related Operators	1.112	0.000	1.511	0.264
82	Machine Operators and Assemblers	1.579	0.971	1.990	2.424
83	Drivers and Mobile Plant Operators	1.038	0.754	2.562	2.724
Division 8	**Elementary Occupations**	1.168	1.710	2.272	3.359
91	Sales and Service Elementary Occupations	1.325	3.294	1.330	2.175
92	Agricultural, Fishery and Related Labourers	1.232	0.807	0.857	0.839
93	Labourers in Mining, Construction, Manufacturing and Transpo	1.209	0.702	1.736	2.318
Division 9	**Workers not Classified by Occupations**	1.485	3.428	1.474	2.501
Division X	**New Workers Seeking Employment**	1.762	2.241	1.974	2.688
n.r	Workers Reporting Occupations Unidentifiable or Inadequately	2.706	1.182	1.625	0.520
total	Workers Not Reporting Any Occupations	2.266	3.001	2.727	3.564

Source: computed from NSS report, 2009-10

6. Concluding remarks

Rising inequality in India during the high growth scenario could largely be explained by a significant shift in the share of value added in favour of profits. This is reflected in the overall economy by a decline in compensation to employees that started since 1993-94. But if we focus to the manufacturing sector the share of wages in gross value added declined consistently during the past four decades. The share of profits in value added increased precisely from 1993-94 only and that seems to be the result of both declining share of wages as well as share of interest paid in gross value added. This is very similar to the global picture in the era of liberalisation where the growth is primarily driven by profit inflation derived by a contraction of labour's share as well as easy availability of finance with declining interest payments. Although the shift in factor incomes that reduces labour's share in value-added is likely to have depressing effects on demand since workers use to have higher propensity to consume than capitalists but this shift toward profit led growth generates a peculiar growth trajectory that obviously depends upon demands of goods and services that either could be produced domestically by increasingly capital intensive technologies or through rising imports. This perhaps provides a clue to the riddle that in India although labour is relatively cheap industries

are increasingly using capital intensive technologies. One aspect of this move is of course to have greater control on the production process but the more contemporary factor might be that in high-end products it becomes imperative to use technologies that are labour displacing precisely to attain the level of precision which is beyond human capacity. In the manufacturing segment the material cost to output remained more or less same over the years, fuel costs to output declined since 1980s and labour costs declined from 8 per cent in 1973-74 to 2.4 per cent in 2003-04. It is sometimes argued that unionization of the labour force has kept wages high inducing greater use of labour displacing technologies. Hence, if the labour market is left free of institutional rigidities such as trade unions, labour laws, minimum wages and so on, wages would come down equal to the productivity of labour. This does not seem to be compatible with the fact of widening gap between labour productivity and share of wages in value added or real wages over the years. If the labour market is deinstitutionalized as it has already been so there is no reason of course that the market will ensure increase in wages proportionate to rise in productivity. Because, wage is determined by what the last employer is willing to pay in order to attract and employ a worker and what the last worker requires in order to be attracted and employed. Hence, within the demand-supply framework if increase in productivity reduces the demand for labour there is no reason for a rise in wages. And if there is relative over supply of labour caused by either a rise in labour productivity or a shift in labour from agricultural sector, free functioning of market can never ensure wages reflecting productivity. Moreover the share of workers seems to show some increasing trend in the unorganized manufacturing compared to the organized sector. The workers that enjoyed at least some institutional support to protect their wages have lost their share over the years because of their declining bargaining strength as a result of gradual dismantling of such supports while the share increased for those where the wages are broadly market determined. The other worrying fact of course is that during the past four decades capital intensity increased at much higher proportion than the rise of labour productivity and this is perhaps indicative of the fact that investments in the manufacturing sector were not always directed towards productivity raising machinery but also toward creating capacities that did not result in higher productivity. The rise in capital intensity is also commensurate to the fact of declining share of workers within total persons employed precisely because it increased the demand for skilled workers who might be considered as salaried employees and not as 'workers'. Furthermore because of the rise in the demand for skills, the skill premium for both male and female workers increased over time. But it declined in 2009-10 compared to 2004-05 in almost all the sectors probably because of the recessionary impact that would have reduced the demand for skills. However in countries such as India the relative supply of skills in various sectors would be driven by the relative absorption capacity of different sectors. And hence the skill composition of the workforce across sectors might not be driven by

their relative skill requirements. Rather absorption happens to be higher in sectors that require lesser skills pushing down the skill premium further in that case. Hence, in the long run there seems to be little possibilities of endogenous growth in skill-complementary technology outpacing the rising supply of educated workers. As a result conjectures such as increasing spiral of demand and supply for skilled workers mutually determining each other, often conceived in the context of developed countries would not be the likely outcome.

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